(nearly eight ounces), and the right, 235 grammes (seven and a half ounces). On washing the tissue of the kidneys, sugar was obtained, but in a much smaller quantity than from the liver. The pancreas and spleen were diminished in size, and contained none; nor was there any in the nervous centres. The blood contained large quantities of sugar, from whatever part it was taken. M. Bernard, in calling to mind a case in which the serum of the blood, left to itself, became acid by the decomposition of sugar, remarks that this bears on a circumstance in the present autopsy. Sugar was found in the serosity which filled the pericardium; but this same alkaline serosity, when removed from the pericardium, became acid in consequence of the decomposition of the sugar. The intestinal and gastric juices, which seem remarkably fitted for the decomposition of sugar, contained none. M. Bernard has met with sugar in the semen of a goat, which had been artificially rendered diabetic. It is interesting to know that, in cases where the tissues and fluids of a diabetic patient can be examined after sudden death, sugar may be found in the blood, liver, and kidneys. The difference in the reaction of the fluids, hitherto referred to the cause which produces the diabetes, is seen to be dependent merely on the decomposition of the sugar.—*Lond. Med. Journ.*, Aug. 1849, from *Gazette des Hôpitaux*, July 10th, 1849.

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7. *On the Composition of the Salts of the Blood, and of their Relation to the Formation of Vesical Calculi.*—M. Verdeit states that the proportions of the different saline compounds in the blood are greatly affected by the nature of the diet; the blood of animals nourished exclusively on flesh being rich in phosphates, with alkaline bases, and containing scarcely any alkaline carbonates; whilst the blood of animals restricted to vegetable diet presents the reverse condition, the alkaline carbonates being present in large amount, and the phosphates existing in it in very small quantity. These differences present themselves not only between the blood salts of carnivorous and of herbivorous animals respectively, but also between those of the same animal nourished for a time upon an animal and a vegetable diet exclusively. Thus, the blood of a dog fed upon meat for eighteen days yielded 12.75 parts of alkaline phosphates in 100 of ash; but, when it had been partly fed for fifteen days upon bread and potatoes, the proportion fell to 9 per cent.; "and if," says the author, "I had been able to sustain it on an exclusively vegetable diet, the amount would have fallen to 2 or 3 per cent., as in the blood of the ox or the sheep." These observations, if confirmed, will have a very important bearing upon the treatment of calculous disorders, since urinary deposits consist, in by far the greater number of cases, either of uric acid or of phosphates. Now, uric acid is sparingly soluble in water, and still less so in acid urine [this does not agree with the statements of Liebig, which have been confirmed on this point by others]; but it is rendered much more soluble by the presence of alkalies in the urine. Now, as the acidity of the urine is due to the excess of phosphoric acid, which is the result of an animal diet, a vegetable diet, which will render the urine alkaline like that of the herbivorous animals, is indicated. On the other hand, if the phosphates constitute the materials of the deposit, their amount in the blood and urine may be lowered in the same manner.—*Brit. and For. Med.-Chirurg. Rev.*, July, 1849, from *Gazette Médicale*, June, 1849.

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8. *Investigations and Experiments on Human Blood.*—Dr. Giovanni Polli, well known by his iatro-chemical labours, has published, in the *Giornale Lombardò di Scienze, &c.*, a memoir on human blood. Of this highly interesting paper we shall give a brief analysis.

Buffy Coat.—Dr. Polli thinks, with many other pathologists, that the formation of this substance depends on the greater or less rapidity of the coagulation. The white, depressed, and very thick buffy coat points to blood slow in coagulating, and rich in fibrine; the clot is then dark red, and so much the softer as the buffy coat is firmer. The gelatiniform coat indicates, likewise, slow coagulation, but a diminution in the amount of fibrine. A rugose coat denotes the slowest coagulation. A clot both buffed and cupped, and adhering to the parietes of the vessel, results from thin blood which has pretty rapidly

coagulated. This latter character generally appears after repeated and abundant bleeding. The grayish and striated coat is connected with a great density of blood and slow coagulation. The question how far the aspect of the blood can serve as a criterion for the further use of venesection, is answered thus:—1. Slow coagulation indicates an excess of strength and inflammation; rapidity of it, weakness and exhaustion. 2. The tardiness of coagulation may be measured by the height and thickness of the coat. 3. The first and twelfth ounce, in a venesection of twelve ounces, coagulate within different spaces of time, and present, therefore, different coats. 4. In bleeding to syncope, the last portions of the blood coagulate rapidly, and are not buffed, though the first showed the reverse phenomena. 5. When bleeding is performed in the stage of oppression, which precedes asphyxia or apoplexy, the first portions of the blood coagulate rapidly, and without buffy surface; the latter portions, particularly when the circulation is re-established, present the contrary appearances. 6. In the different evacuations of blood which have taken place in successfully combating an inflammation, the first portions of the blood, towards the development of the affection, coagulate rapidly, and are very little buffed; whilst the latter portions of the same evacuations coagulate slowly, and have a thicker coat. The two extreme portions of one venesection follow the same progress, as to coagulation and the buffy surface, as the disease itself. Lastly, towards the latter end of the disease, the last portions of one bleeding are quick in coagulating, and are not much buffed; whilst the first coagulate more slowly, and are more buffed. 7. When the latter portion of the bleeding presents a slower coagulation than the first, the patient experiences much less weakness, and more liberty in the circulation and the functions, towards the end than at the beginning of the bleeding. This is a proof that he feels the disease more than the abstraction of blood; bleeding is then indicated, and useful. 8. When the latter portion of the bleeding coagulates more quickly than the first, it shows that the inflammation is yielding to the treatment; or that the patient is near syncope or weakness. Bleeding may, in such a case, be still indicated, but it should be used with moderation. 9. If the two extreme portions of the bleeding coagulate slowly, and present the same coat; if the inflammation is not accompanied by an oppression of the circulation; or if the patient bears the abstraction of blood without giving any signs of exhaustion, bleeding is still indicated. 10. If the two extreme portions of the bleeding coagulate rapidly, and the last still more quickly than the first, there is no longer any excess of strength to be overcome; any further abstraction of blood would merely weaken the patient, and is clearly counterindicated. 11. The indication furnished by the two extreme portions of the bleeding extends over the space of about twelve hours; it may extend further, if the disease is giving way, but may still vary, from the presence of a new exacerbation.

Fibrine.—The mere augmentation of fibrine in the blood is connected with an inflammation in the first degree. When the same fibrine coagulates slowly, a higher degree of inflammation is indicated; and rarefied fibrin points to a still higher degree than the last; but complete resolution is still possible. Each of these modifications of the fibrin is made manifest by a peculiar state of the clot.

Influence of Venesection on the Quantity and Density of the Blood in Circulation.—By means of the areometer, Dr. Polli has ascertained that the last portions of an emission of blood have a less density than the first. This diminution in the density indicates the introduction into the mass of the blood of a thinner fluid which is diluting it. By this circumstance may be calculated how much fluid is introduced at each bleeding, by observing the diminution in the density. By numerous experiments, the author is led approximatively to estimate the loss produced by an ordinary bleeding to a thirtieth of the blood then left in the system; and the amount of serosity absorbed in the interval of one venesection to the other, in twelve hours, to double that fraction.

Quality of the Blood.—1. The diminution in the density of the blood, produced by bleeding, does not bear equally upon all the constituents of that fluid. 2. Abstraction of blood does not diminish the proportion of fibrin remaining in the economy; it may even increase it at the expense of the globules dissolved by the new serosity, or those which are obtained from the substance of the mus-

cles. 3. Repeated bleedings, carried to a certain extent, instead of producing on the serum of the blood the impoverishing effect which the other materials of the blood suffer, increase the density of the serum. 4. A large venesection, performed at once, produces effects different from those resulting from the abstraction of the same amount of blood taken at various times. The impoverishing effect of a single large bleeding is three times greater than that produced by taking away the same quantity of blood at several times. 5. Bleeding, carried too far, is apt to cause the generation of false membranes, and favour serous effusions. 6. The temperature of the blood falls at once, on venesection being performed, but soon becomes higher than what it was before the abstraction of blood.

Motion of the Blood.—1. Emissions of blood always have the effect of producing a movement of the mass of the blood in the capillaries, in virtue of which the blood presses towards the opening which habitually gives it passage. 2. Abstraction of blood from the venous branch of a little venous vascular system causes a more rapid motion, not only as regards the blood of the neighbouring venous twigs, but likewise in the corresponding arteries. 3. Gravity exercises in the capillaries, as well as in the larger vessels, a decided action on the circulation of the blood, which action may be made available in the abstraction of blood. 4. Venesection, with man, as well as the lower animals, has the effect of accelerating the pulse. 5. Abstraction of blood, both in animals and man, renders the action of the heart apparent, and allows those arterial twigs to be seen which are not perceivable in the ordinary state. 6. Bleeding to syncope renders the pulse slower. 7. Repeated bleedings have a tendency, not only to accelerate the circulation, but also to increase the frequency of respiration; and these two effects are very slow in disappearing.—*Lancet*, Aug. 4, 1849.

MATERIA MEDICA AND PHARMACY.

9. *On Glycerine and its Therapeutic Uses.*—The employment of glycerine as a local application in the treatment of deafness, and also for other purposes as a medicinal agent, has induced us to offer a few remarks on the preparation and properties of this hitherto neglected body.

To obtain glycerine, any fatty matter is saponified by a caustic alkali. The solution being decomposed by tartaric acid, which precipitates the fatty acid, is to be evaporated, and the glycerine dissolved out by strong alcohol. For medicinal use, it is best obtained by evaporating the water used in making *emplastrum plumbi.* Any lead which it may contain is removed by a stream of sulphuretted hydrogen passed through it when in a diluted state. If necessary, it may be boiled with animal charcoal, filtered, and evaporated.

It is a colourless syrup, sp. gr. $=1.26$; it dissolves in water and alcohol, but is insoluble in ether (Kane's Chemistry, 1849, p. 872). Glycerine undergoes no change by keeping, but it is decomposed by heat; and when mixed with yeast, and kept in a warm place, is gradually decomposed, and converted into *metacetonic acid.* Its formula is $C_6H_7O_5+Aq$.

Glycerine has a strong attraction for moisture, and being of a bland, innocuous nature, it is obviously well adapted to afford a permanent moist covering to any part of the body to which it may be applied. It was first employed by Mr. Yearsley in cases of deafness, arising from partial destruction of the membrane of the tympanum, and Mr. J. Wakley and others have extended its employment to all cases of deafness accompanied by dryness of the external meatus, and it is probable that in some cases of this kind it may be more serviceable than the almond oil commonly employed to remedy a deficiency of cerumen. Dr. Paterson, of Edinburgh, has obtained some improvement in one of three cases in which he applied it. A small piece of cotton wool is moistened with the glycerine, and introduced into the ear. When there is loss or partial destruction of the tympanum, we are directed to use a very small quantity of wool, and to moisten it well with the glycerine. This is passed to the site of the membrane,